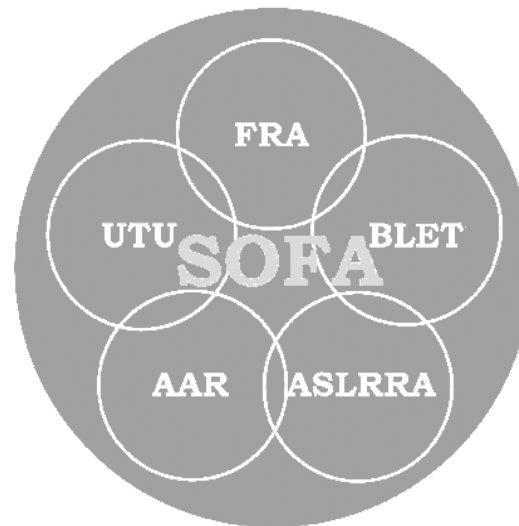


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Make Switching Fatality Free:

Apply SOFA Operating Recommendations – Recognize Special Switching Hazards



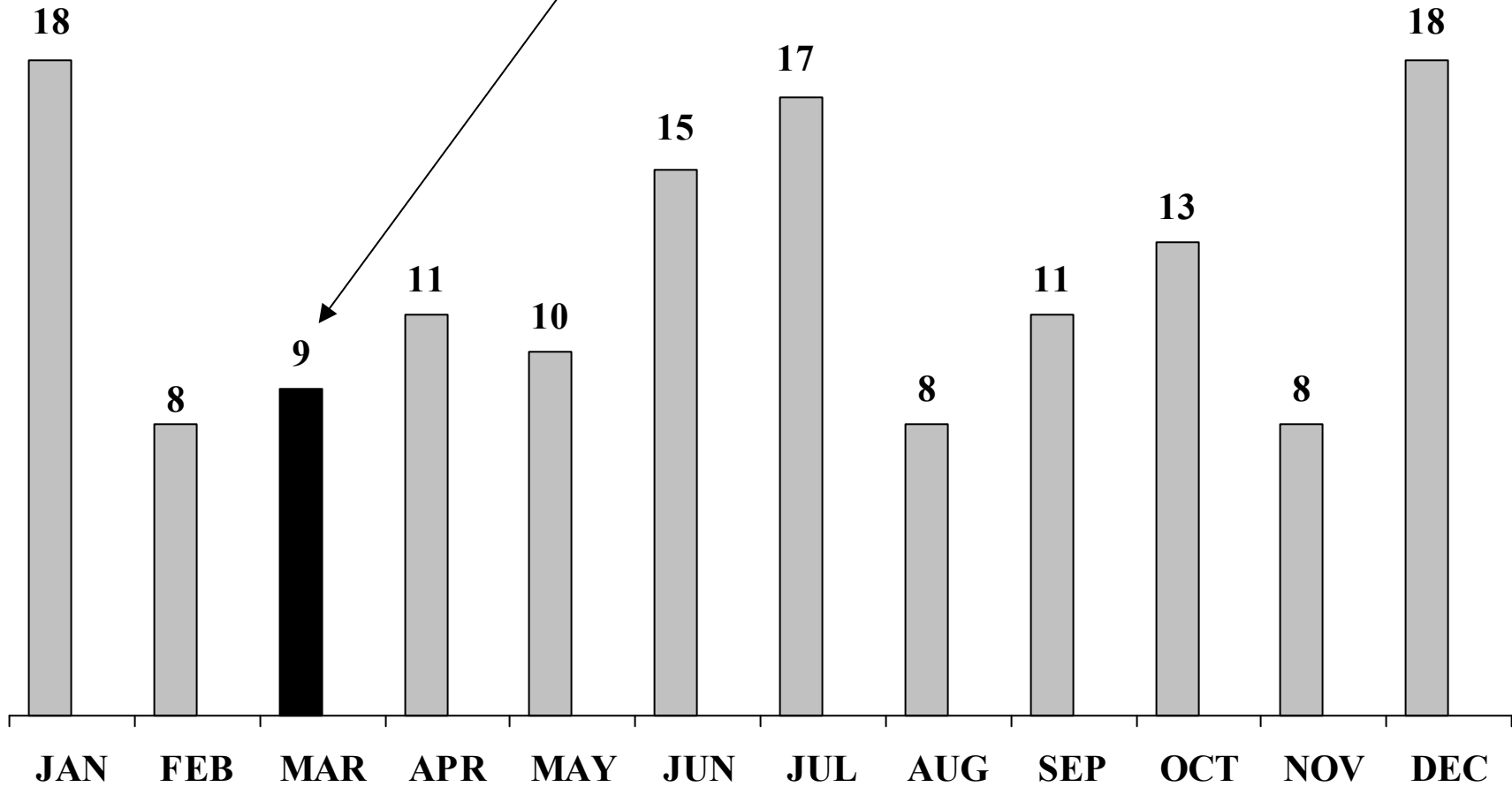
March 2006 Switching Fatality and Severe Injury Update

The SOFA Working Group

Comprised of union, management, and government representatives, the SOFA Working Group is trying to *Make Switching Fatality Free* through education and monthly dissemination of information on how Fatalities occur – and how such events, averaging 10.4 per year, can be prevented.

Switching Fatalities in March since 1992

There is always risk to employees engaged in switching

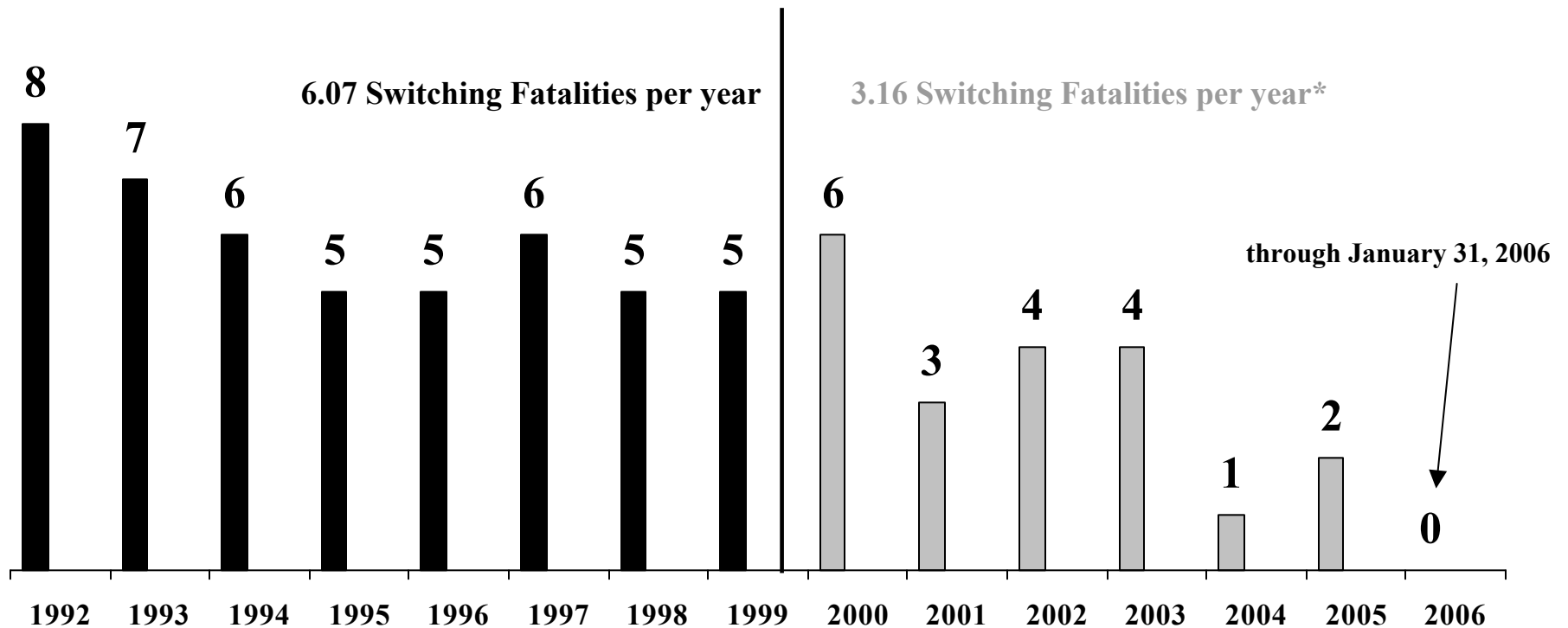


10.4 Fatalities occur each year to employees engaged in switching

Applying SOFA Operating Recommendations is having an effect

The original *SOFA Report*¹ was released in October 1999. Prior to the release, there were 47 Switching Fatalities related to the Five Operating Recommendations in the 7.75-year period January 1992 through September 1999. Expressed as a rate, there were 6.07 Switching Fatalities per year related to Operating Recommendations.

In the post-SOFA Report period of 6.33 years, October 1999 through January 2006, there were 20 Switching Fatalities related to the Five Operating Recommendations. Expressed as a rate, there were 3.16 Switching Fatalities per year* related to Operating Recommendations.



* The Switching Fatality at Burlington, IA, on December 4, 2005, is believed to involve a Close Clearance Special Switching Hazard. If further review by the SOFA Working Group determines one or more Operating Recommendations were involved, the Switching Fatality rate after the release of the *SOFA Report* would increase from 3.16 to 3.32.

¹ Findings and Recommendations of the SOFA Working Group. October 1999. Available at <http://www.fra.dot.gov/us/content/102>

Recognizing Special Switching Hazards Needs Emphasis

There has been a shift in proportion among the two general reasons the SOFA Working Group has identified as causing these unfortunate events: Operating Recommendations and Special Switching Hazards. Most Switching Fatalities now involve one or more Special Switching Hazards. The SOFA Working Group (SWG) believes the industry's emphasis on *Applying SOFA Operating Recommendations* has had a positive effect – as will continued emphasis. But to *Make Switching Fatality Free*, additional emphasis is needed in *Recognizing Special Switching Hazards*.

“In addition to the Five Operating Recommendations, the SWG wants to make those engaged in switching aware of Special Switching Hazards. In its review of each of the 124 fatalities, the SWG identified a number of fatalities involving close clearances (10 fatalities), being struck by mainline trains (8 fatalities), and occurring during shove movements (61 fatalities). The number of fatalities involving close clearance and being struck by mainline trains would be greater if those classified both as a Special Switching Hazard and an Operating Recommendation were included in these fatality counts.” - from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. p. xiv.

Recognize Special Switching Hazards

- Close Clearances*
- Free Rolling Railcars
- Exposure to Mainline Trains
- Tripping, Slipping, or Falling Exposures
- Adverse Environmental Conditions
- Shoving Movements
- Unsecured Cars
- Unexpected Movement of Cars
- Equipment Defects
- Motor Vehicles or Loading Devices
- Drugs and Alcohol
- Other Special Hazards or Events

* The SOFA Working Group has broadened the traditional definition of ‘close clearances’ to include situations “When an employee is passing, or being passed, by an object or equipment and the conditions are such that there is not enough room for the employee to avoid being struck.” From *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. p.48-50. Available at: <http://www.fra.dot.gov/us/content/102>

9 March Switching Fatalities

#	Date	RR	Location	Age	Service (yrs)	Employee's Job	Employee Act	Employee Location	Fatal Event	SOFA Recommendations	Special Switching Hazard
1	03/11/92	FEC	Fort Pierce, FL	36	16	yard conductor	riding	near on-track equip-on ground	derailments	4	
2	03/27/93	SP	Guadalupe, CA	39	19	road brakemen	riding	on end of car	struck by object		Employee Tripping
3	03/02/95	NS	Aiken, SC	46	22	road brakemen	adjusting coupler	on track	struck by on-track equipment	1, 3	
4	03/21/95	SP	Bassett, CA	55	24	road brakemen	walking	on track	struck by on-track equipment		Other Special Hazards or Events (fouling track)
5	03/20/96	BRC	Bedford Park, IL	28	0.34	yard conductor	adjusting coupler	between cars/loc	struck by on-track equipment	1, 5	
6	03/09/00	IHB	Riverdale, IL	43	24	yard conductor	crossing between	between cars/loc	sudden/unexpected movement of on-track equipment	1	
7	03/03/01	BNSF	Willmar, MN	36	3.75	yard brakeman	standing	between cars/loc	struck by on-track equipment	1	
8	03/21/02	NS	Claymont, DE	45	13	road engineer	getting on	near on-track equip-on ground	struck by on-track equipment		Close Clearance, and Struck by Mainline Trains
9	03/10/04	MNCW	Stamford, CT	46					derailments	4	

Four March Switching Fatalities involved SOFA Operating Recommendation 1:

Any crew member intending to foul track or equipment must notify the locomotive engineer before such action can take place. The locomotive engineer must then apply locomotive or train brakes, have the reverser centered, and then confirm this action with the individual on the ground. Additionally, any crew member that intends to adjust knuckles/drawbars, or apply or remove EOT device, must insure that the cut of cars to be coupled into is separated by no less than 50 feet. Also, the person on the ground must physically inspect the cut of cars not attached to the locomotive to insure that they are completely stopped and, if necessary, a sufficient number of hand brakes must be applied to insure the cut of cars will not move.

Lifesaver 1

Secure equipment before action is taken.

Discussion 1

This recommendation emphasizes the importance of securing the equipment. A thorough understanding by all crew members that the area between cars is a hazardous location, whether equipment is moving or standing, is imperative.

March Switching Fatalities

Note: The Switching Fatality narrative summaries are taken from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. All other information is from the SOFA Matrix, the SOFA Working Group's electronic database.

No. 1 of 9: March 11, 1992 – FEC – Fort Pierce, FL

This case involved the conductor riding a car into Track 8. The car derailed at the spiked switch and the conductor was subsequently killed. The conductor's last radio transmission was "...we're lined in eight rail, three or four cars to a joint." Movement stopped after car had derailed and side swiped adjacent car.

SOFA Operating Recommendation(s):	4
Possible Contributing Factor:	Switch point gapped (between switch point and stock rail)
Possible Contributing Factor:	Damaged flange or tread (build up)
External Circumstances:	Track conditions
Day of Week:	Wednesday
Time of Fatal Event:	1:15 AM
Time on Duty (hours: minutes):	6:15
Temperature (Fahrenheit):	71
Direction of Movement:	shoved
Crew's Next Move:	couple
Death Result of Train Movement?	yes
Other Movements Nearby?	no
Track Type:	yard/classification/flat
Hit by Own Equipment?	yes
Striking Train Within Rules?	yes
Speed of Equipment (mph):	5
Deceased Regular Job?	no
Had Deceased Worked There Before?	no
Crew Size:	2
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

March Switching Fatalities

Note: The Switching Fatality narrative summaries are taken from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. All other information is from the SOFA Matrix, the SOFA Working Group's electronic database.

No. 2 of 9: March 27, 1993 – SP – Guadalupe, CA

A four-person crew (engineer, conductor, 2 brakeman) were in the process of pulling one track out and then intended to shove back into another track to pick up more cars. The head brakeman was in control of the move. The rear brakeman was found dead adjacent to the track that was pulled. Evidence suggests that the rear brakeman may have mounted, or tried to mount the car that ran him over as the cut was pulled out of the track.

Special Switching Hazard(s):

Possible Contributing Factor:

External Circumstances:

Employee Tripping

Employee on or fouling track

Snow, ice, mud, gravel, coal etc. on the track

Day of Week:

Saturday

Time of Fatal Event:

12:30 PM

Time on Duty (hours: minutes):

1:00

Temperature (Fahrenheit):

60

Direction of Movement:

pulled

Crew's Next Move:

couple track

Death Result of Train Movement?

yes

Track Type:

yard/flat/classification

Hit by Own Equipment?

yes

Striking Train Within Rules?

no

Speed of Equipment (mph):

2

Crew Size:

4

Drugs Present?

no

Drugs a Factor?

no

Emergency Response Procedures Followed?

yes

March Switching Fatalities

Note: The Switching Fatality narrative summaries are taken from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. All other information is from the SOFA Matrix, the SOFA Working Group's electronic database.

No. 3 of 9: March 02, 1995 –NS – Aiken, SC

Switch crew was pulling a cut of cars out of an industry. Brakeman stepped in track gauge to open knuckle on the rear car at the same time crew shoved back to kick two cars that ran over the brakeman.

SOFA Operating Recommendation(s):	1, 3
Possible Contributing Factor:	Failure to provide adequate space between equipment
Possible Contributing Factor:	Poor intra-crew communication about work in progress
Day of Week:	Thursday
Time of Fatal Event:	9:44 AM
Time on Duty (hours: minutes):	2:15
Temperature (Fahrenheit):	45
Direction of Movement:	shoved
Death Result of Train Movement?	yes
Other Movements Nearby?	no
Track Type:	main
Hit by Own Equipment?	yes
Striking Train Within Rules?	yes
Speed of Equipment (mph):	1
Crew Size:	3
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	6 minutes to tell dispatcher, 30 min. for EMS arrival

March Switching Fatalities

Note: The Switching Fatality narrative summaries are taken from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. All other information is from the SOFA Matrix, the SOFA Working Group's electronic database.

No. 4 of 9: March 21, 1995 – SP – Bassett, CA

A three-person crew was called to operate a road local and arrived at a location where some plant switching was to take place. After lining up their cars, the two locomotives and two cars began a shove move on the brakeman's radio command. The brakeman was walking adjacent to the track on which the cars were being shoved and had his back to the move. He was killed when he suddenly crossed the tracks in front of the movement and was struck. The move stopped immediately. Post accident investigation revealed that the brakeman was concerned about the results of a medical examination that were due the next day.

Special Switching Hazard(s):

Possible Contributing Factor:

External Circumstances:

Day of Week:

Time of Fatal Event:

Time on Duty (hours: minutes):

Direction of Movement:

Crew's Next Move:

Death Result of Train Movement?

Other Movements Nearby?

Track Type:

Hit by Own Equipment?

Striking Train Within Rules?

Speed of Equipment (mph):

Deceased Regular Job?

Crew Size:

Drugs Present?

Drugs a Factor?

Other Special Hazard or Event (fouling track)

Employee on or fouling track

Employee physical condition, other

Friday

8:40 AM

1:40

shoved

coupling

yes

no

industrial/outside/stub/track

yes

yes

4

yes

3

no

no

March Switching Fatalities

Note: The Switching Fatality narrative summaries are taken from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. All other information is from the SOFA Matrix, the SOFA Working Group's electronic database.

No. 5 of 9: March 20, 1996 – BRC – Bedford Park, IL

Three-person crew was switching in class yard, coupling between sixth and seventh car failed to couple. Conductor stopped locomotive and went between the cars to straighten the drawbar, and twenty-three cars rolled in behind him and coupled him up.

SOFA Operating Recommendation(s):	1,5
Possible Contributing Factor:	Employee on or fouling track
Possible Contributing Factor:	Failure to apply handbrakes on car(s)
External Circumstances:	Crew experience
Day of Week:	Wednesday
Time of Fatal Event:	11:25 PM
Time on Duty (hours: minutes):	0:25
Temperature (Fahrenheit):	28
Direction of Movement:	free-running
Crew's Next Move:	couple track
Death Result of Train Movement?	yes
Track Type:	classification
Hit by Own Equipment?	yes
Striking Train Within Rules?	yes
Speed of Equipment (mph):	1
Crew Size:	3
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

March Switching Fatalities

Note: The Switching Fatality narrative summaries are taken from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. All other information is from the SOFA Matrix, the SOFA Working Group's electronic database.

No. 6 of 9: March 09, 2000 – IHB – Riverdale, IL

The employee was struck by an unsecured cut of cars that rolled into him while he was attempting to adjust the coupler or drawbar.

SOFA Operating Recommendation(s):

Possible Contributing Factor:

Possible Contributing Factor:

Possible Contributing Factor:

1

Failure to provide adequate space between equipment

Failure to apply handbrakes on car(s)

Employee on or fouling track

Day of Week:

Thursday

Time of Fatal Event:

4:20 AM

Time on Duty (hours: minutes):

5:05

Temperature (Fahrenheit):

54

Direction of Movement:

free-running

Crew's Next Move:

pull track

Death Result of Train Movement?

yes

Other Movements Nearby?

no

Track Type:

hump/classification

Hit by Own Equipment?

yes

Striking Train Within Rules?

no

Speed of Equipment (mph):

1

Deceased Regular Job?

yes

Crew Size:

3

Drugs Present?

no

March Switching Fatalities

Note: The Switching Fatality narrative summaries are taken from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. All other information is from the SOFA Matrix, the SOFA Working Group's electronic database.

No. 7 of 9: March 03, 2001 – BNSF – Willmar, MN

The switchman of a three-person yard switching crew made a cut on a block of cars sitting on a yard track and told the engineer to pull the cars out. Apparently, as the cars were being pulled out, the switchman stepped between the gauge of the track and was struck and killed by the remaining cars on the track that had begun to roll in the same direction as the cars being pull out of the track.

SOFA Operating Recommendation(s):	1
Possible Contributing Factor:	Employee on or fouling track
Possible Contributing Factor:	Snow, ice, mud, gravel, coal etc. on the track
External Circumstances:	3' of snow
Day of Week:	Saturday
Time of Fatal Event:	7:15 PM
Time on Duty (hours: minutes):	3:45
Temperature (Fahrenheit):	30
Direction of Movement:	pulled/free-running
Crew's Next Move:	couple to another track
Death Result of Train Movement?	yes
Other Movements Nearby?	no
Track Type:	yard/flat/classification
Hit by Own Equipment?	yes
Speed of Equipment (mph):	7
Deceased Regular Job?	yes
Crew Size:	3
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

March Switching Fatalities

Note: The Switching Fatality narrative summaries are taken from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. All other information is from the SOFA Matrix, the SOFA Working Group's electronic database.

No. 8 of 9: March 21, 2002 – NS – Claymont, DE

A locomotive engineer had been dropped off at the head end of his train while the conductor was taken to the rear to check on the REM. After crossing over the ATK corridor mainline tracks, and beginning to board his locomotive, the engineer was dragged off the stairs of the locomotive and killed by a passing 110 MPH passenger train.

Special Switching Hazard(s):

Possible Contributing Factor:
Possible Contributing Factor:
Possible Contributing Factor:
External Circumstances:

Close Clearance and Struck by Mainline Trains

Close or no clearance
Other miscellaneous causes
Speed, other
Struck by 111 mph train at night

Day of Week:	Thursday
Time of Fatal Event:	12:24 PM
Time on Duty (hours: minutes):	2:26
Direction of Movement:	pulled
Crew's Next Move:	brake test
Death Result of Train Movement?	yes
Other Movements Nearby?	yes
Track Type:	main
Hit by Own Equipment?	no
Striking Train Within Rules?	yes
Speed of Equipment (mph):	111
Deceased Regular Job?	yes
Crew Size:	2
Drugs Present?	no
Drugs a Factor?	no

March Switching Fatalities

Note: The Switching Fatality narrative summaries are taken from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. All other information is from the SOFA Matrix, the SOFA Working Group's electronic database.

No. 9 of 9: March 10, 2004 – MNCW – Stamford, CT

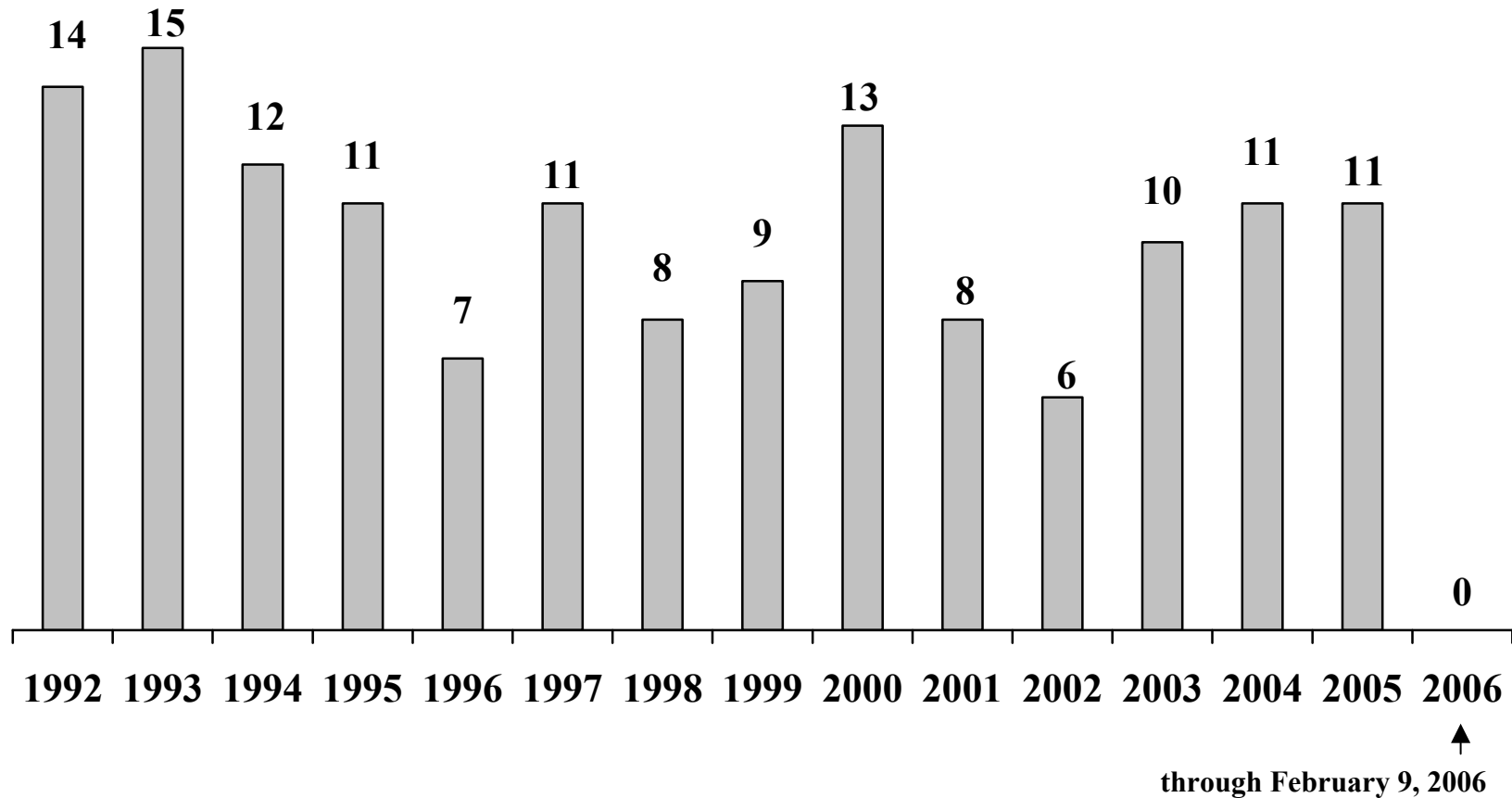
(To be reviewed by SOFA Working Group.)

A 46-year old Metro North Commuter Rail (MNCW) conductor, with 27-years service, killed when struck by his own equipment at the Metro North Stamford Yard, Stamford, CT.

***Make Switching Fatality Free:
Apply SOFA Operating Recommendations – Recognize Special Switching Hazards***

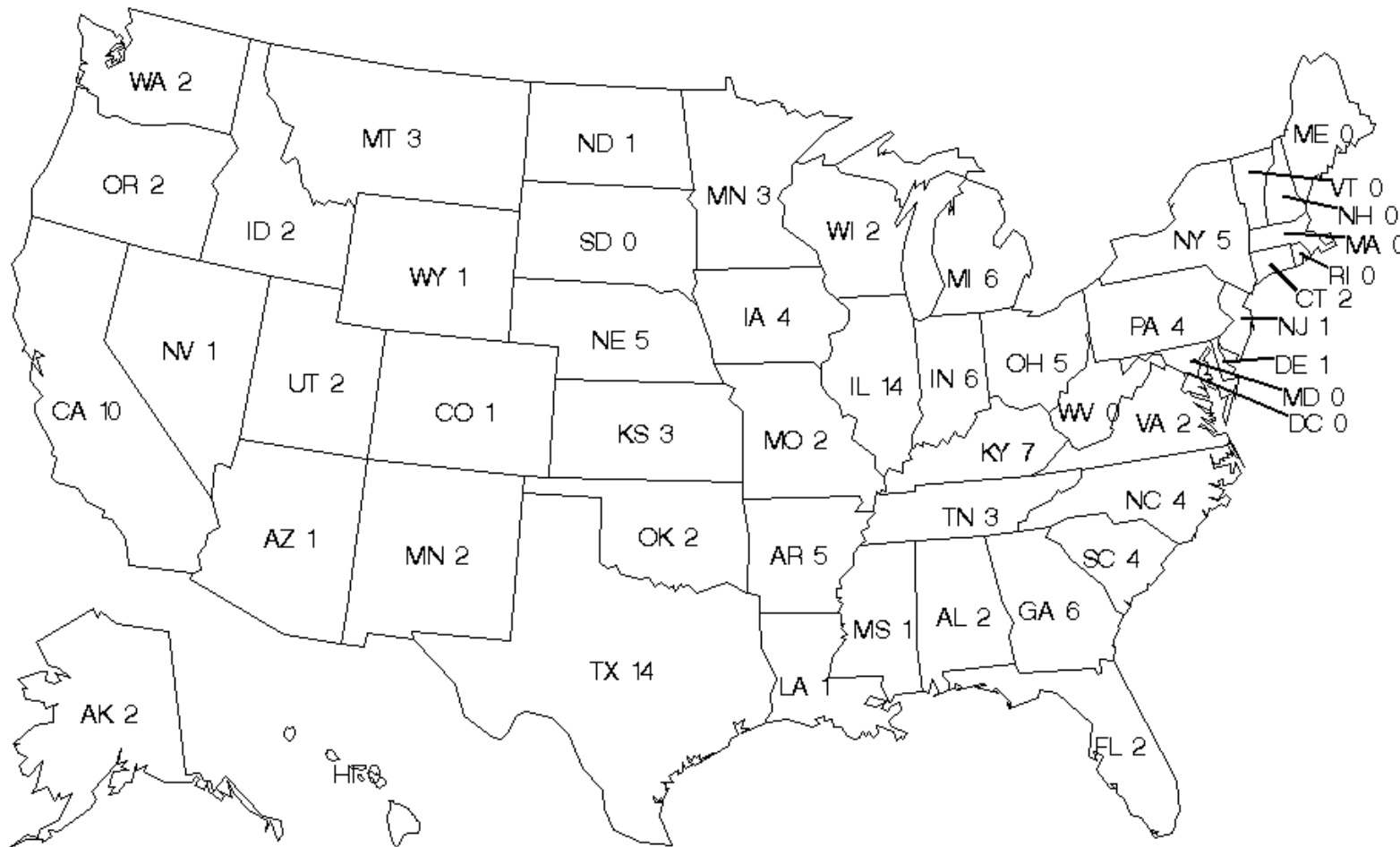
146 Switching Fatalities Since 1992

The SOFA Working Group reviews each Switching Fatality after the Federal Railroad Administration completes its investigation. There have been 146 Fatalities since 1992. In the last three years, 10, 11, and 11 Fatalities respectively have occurred. **The last Switching Fatality occurred on December 4, 2005 at Burlington, IA:** A Burlington Northern Santa Fe (BNSF) brakeman, riding the side of a car into an area posted as “close clearance,” was killed when he was crushed between the car he was riding and a steel walkway support beam.



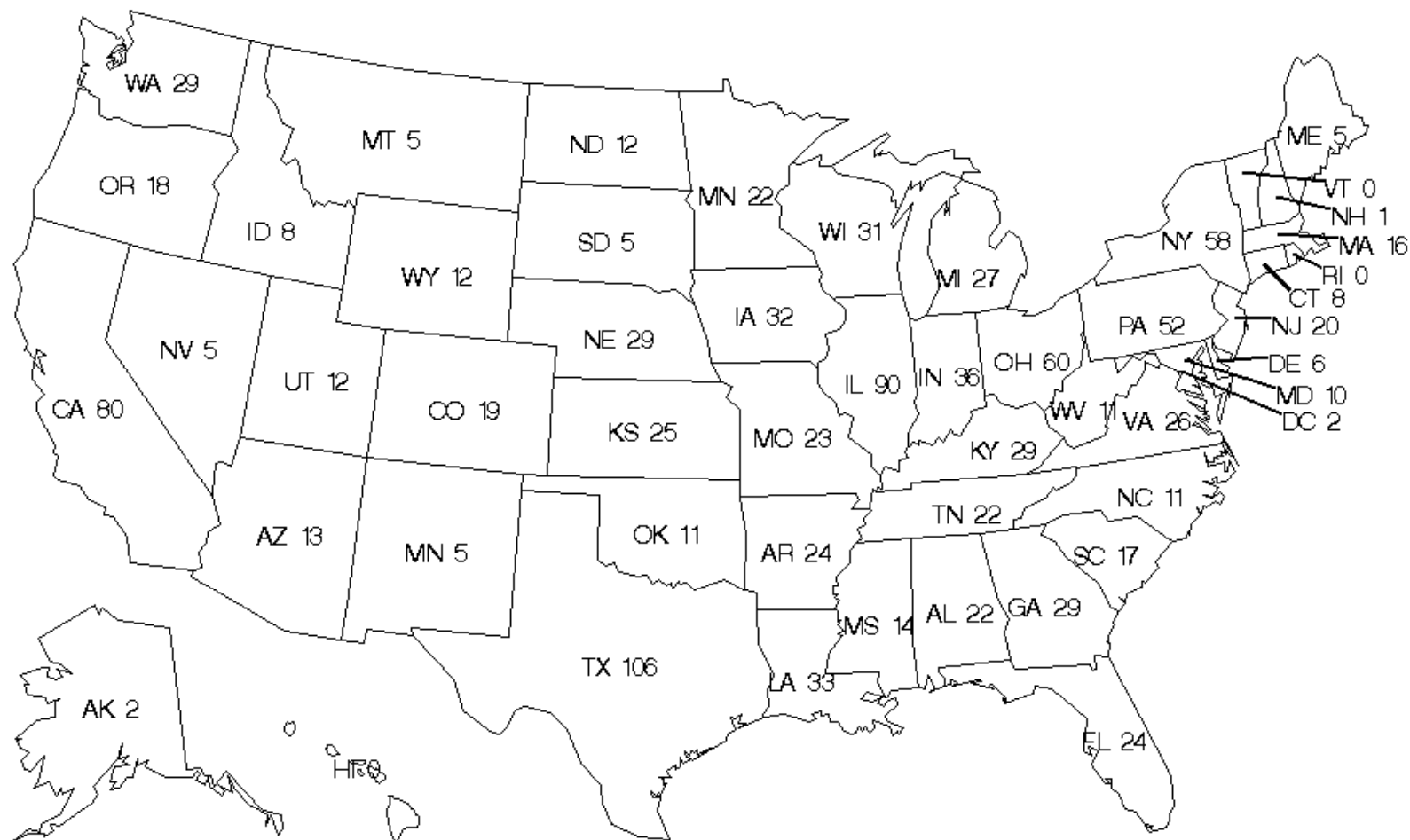
10.4 Fatalities occur each year to employees engaged in switching.

146 Switching Fatalities by State, January 1992 to January 2006



Apply SOFA Operating Recommendations — Recognize Special Switching Hazards (SOFA Working Group)

1,157 SOFA—Defined Severe Injuries by State, January 1997 to November 2005



Apply SOFA Operating Recommendations — Recognize Special Switching Hazards (SOFA Working Group)

SOFA-defined Severe Injuries

January 1992 to November 2005

	1997	1998	1999	2000	2001	2002	2003	2004	2005	totals	average
JAN	11	13	16	15	21	12	11	11	20	130	14.4
FEB	17	15	9	9	9	13	17	14	11	114	12.7
MAR	14	12	17	11	10	10	13	10	9	106	11.8
APR	8	10	6	10	12	6	9	13	10	84	9.3
MAY	6	12	8	8	12	14	9	6	6	81	9.0
JUN	9	10	8	11	8	5	10	9	7	77	8.6
JUL	9	14	10	8	10	7	6	10	5	79	8.8
AUG	13	10	11	14	8	10	7	14	10	97	10.8
SEP	10	11	15	10	20	12	5	4	9	96	10.7
OCT	12	12	16	10	5	11	9	7	9	91	10.1
NOV	12	9	12	11	13	14	10	10	11	102	11.3
YEAR-TO-DATE	121	128	128	117	128	114	106	108	107		
DEC	18	9	7	22	12	9	8	15		100	12.5
totals	139	137	135	139	140	123	114	123		1,157	131.3

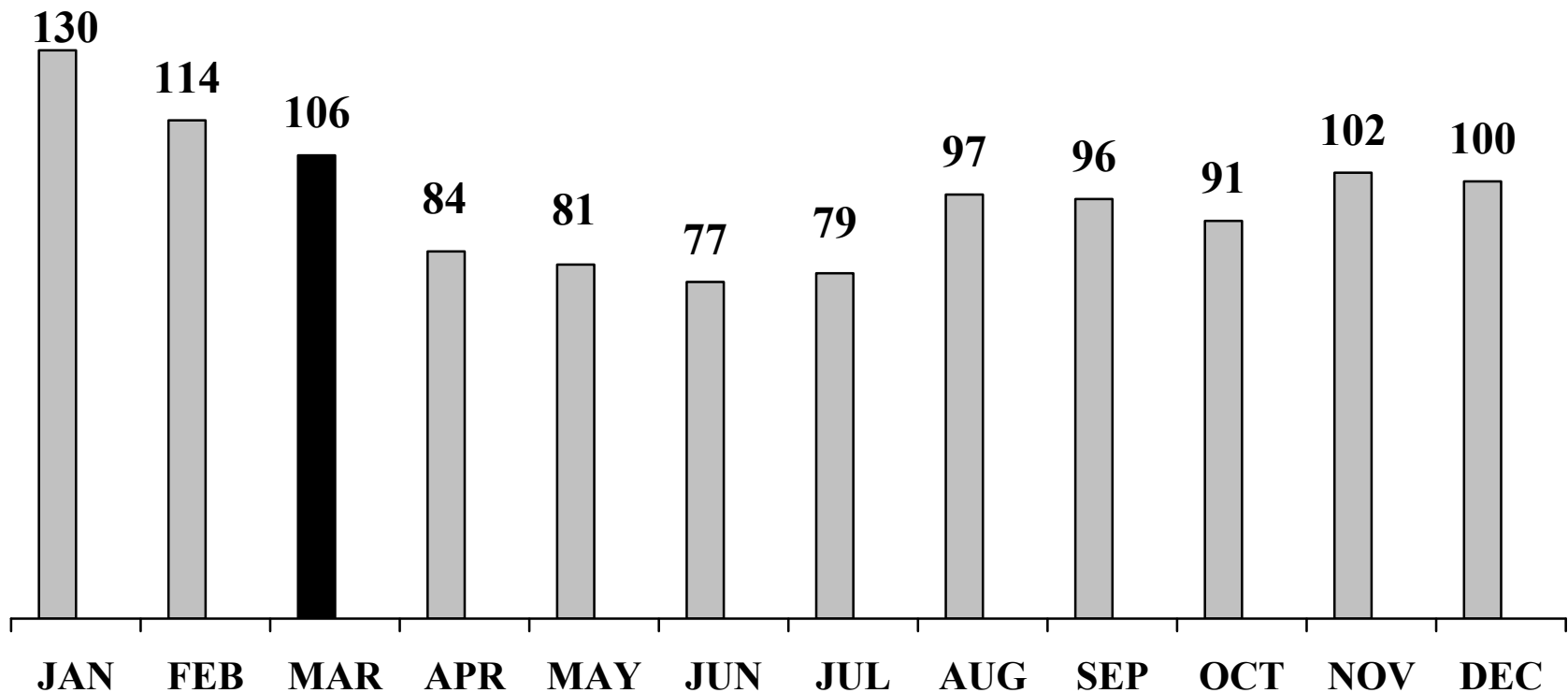
138.0 Severe Injuries occurred on average per year from 1997 through 2001.

120.0 Severe Injuries occurred on average per year from 2002 through 2004.

Severe Injuries are defined by the SOFA Working Group as (1) potentially life threatening; (2) high likelihood of permanent loss of function, permanent occupational limitation, or other permanent disability; (3) likely to result in significant work restrictions; and (4) result from a high-energy impact to the human body. 'Severe Injuries' include amputation, dislocation of the neck, loss of eye, electric shock or burn, and fracture to any bone except the lower arm, fingers, foot, and toes, See *Severe Injuries to Train and Engine Service Employees: Data Description and Injury Characteristics*. July 2001. Available at: <http://www.fra.dot.gov/us/content/102>

106 SOFA-defined Severe Injuries (including amputations) in March since 1997

(January to November represents 9 years of Severe Injuries. December is 8 years.)



1,157 Severe Injuries occurred from January 1997 through November 2005

Amputations

A type of SOFA-defined Severe Injuries

Amputations are shown separately because of the extreme trauma to employees engaged in switching, and the potential for permanent occupational limitations.

January 1992 to November 2005

	1997	1998	1999	2000	2001	2002	2003	2004	2005	totals	average
JAN	1	0	2	1	0	0	2	2	2	10	1.1
FEB	0	1	0	1	0	2	1	2	0	7	0.8
MAR	3	4	3	2	1	1	3	1	2	20	2.2
APR	1	2	0	1	2	0	1	1	2	10	1.1
MAY	1	2	3	0	2	2	2	0	0	12	1.3
JUN	2	1	1	0	1	0	0	1	0	6	0.7
JUL	1	5	1	0	4	0	1	2	1	15	1.7
AUG	1	0	1	4	0	1	0	2	2	11	1.2
SEP	2	4	3	2	5	4	0	0	3	23	2.6
OCT	2	5	2	2	0	0	2	2	0	15	1.7
NOV	2	2	2	2	3	0	1	1	2	15	1.7
YEAR-TO-DATE	16	26	18	15	18	10	13	14	14		
DEC	4	1	0	4	1	1	2	1		14	1.7
totals	20	27	18	19	19	11	15	15		158	18.0

20.6 Amputations occurred on average per year from 1997 through 2001.

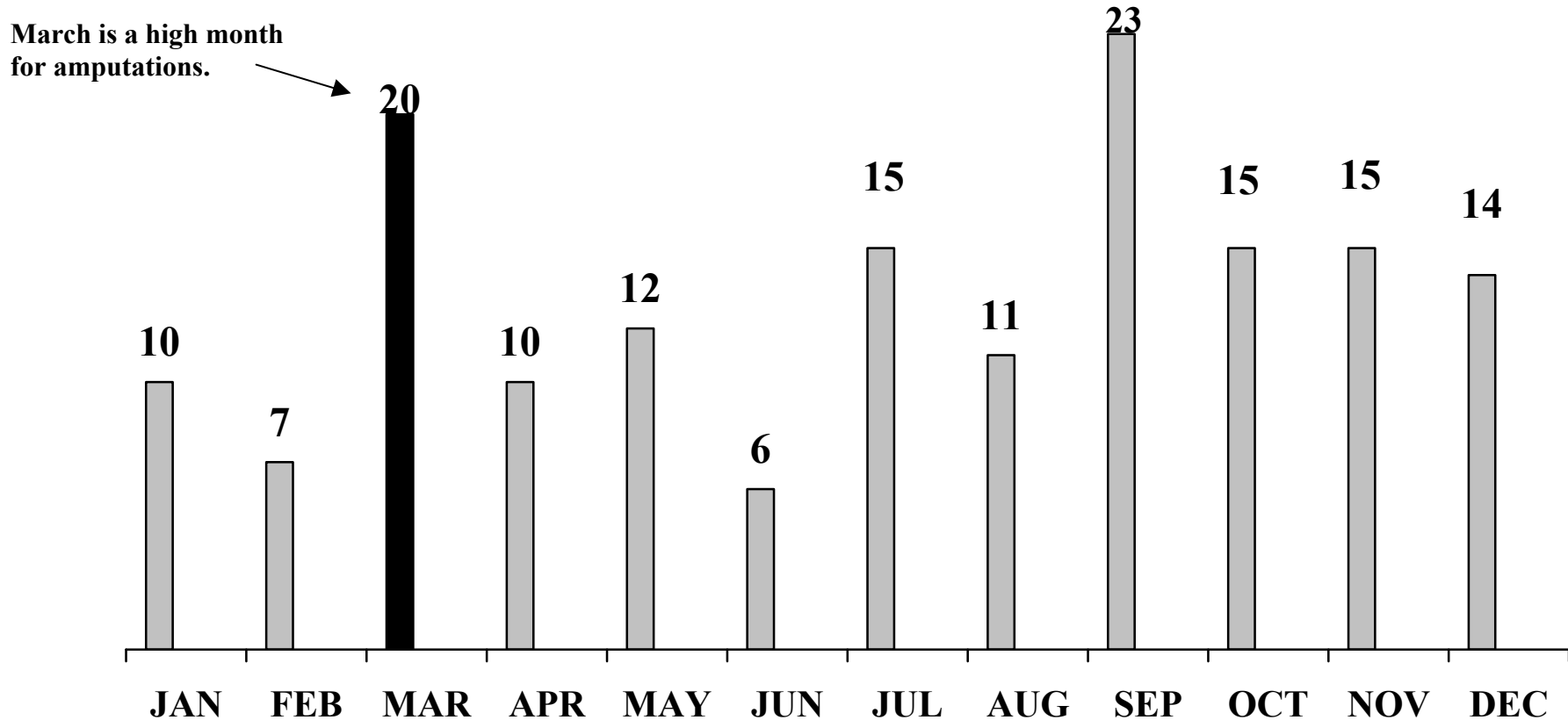
13.7 Amputations occurred on average per year from 2002 through 2004.

20 Amputations (a type of Severe Injury) in March since 1997

Amputations are a type of SOFA-defined Severe Injury and are counted in Severe Injuries.

Amputations are shown separately because of the extreme trauma to employees engaged in switching, and the potential for permanent occupational limitations.

(January to November represent 9 years of Severe Injuries. December is 8 years.)



158 amputations occurred from January 1997 through November 2005